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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/535,210	05/17/2005	Tomoko Maruyama	03500.017831	9407

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NEW YORK, NY 10112

EXAMINER

REDDY, KARUNA P

ART UNIT	PAPER NUMBER
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1713

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/23/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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Office Action Summary

Application No.

10/535,210

Applicant(s)

MARUYAMA ET AL.

Examiner

Karuna P. Reddy

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 12 February 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 2/12/2007.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to amendment filed on February 12, 2007.
Applicants have amended claims 1, 7 and 9; added claims 11-13. Claims 1-13 are pending.
2. In view of the amendment, all previous rejections are withdrawn. However, the amendment necessitates new grounds of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:
 1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
5. Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berge et al (WO 01/77198 A1) in view of Garces (US 6, 773, 790 B1 - WIPO

publication WO 01/01928 is used for date purposes and the US equivalent is referred to in the rejection below).

Berge et al disclose a microgel formed from one or more solvophobic monomers and one or more solvophilic monomers to form one or more block copolymers. The block copolymers are dispersed in a dispersing medium to form micelles. The dispersing medium can be aqueous or lipophilic. The reference also refers to encapsulation of wide variety of materials (abstract). The component of the block that is soluble forms shell of the micelle and that which is less soluble or insoluble forms core of the micelle (page 19, lines 9-11).

Depending on the solvophobic – solvophilic block copolymer and dispersing medium, micelle or a reverse micelle can be formed. For example, poly(butyl methacrylate)-block-poly(methyl acrylic acid) , a solvophobic – solvophilic block copolymer, may be dispersed in water, a solvophilic solvent to form micelles in which the methacrylic acid segment forms the shell and butyl methacrylate segment forms core of the micelle. The same block copolymer may be dispersed in a hydrocarbon solvent to form an inverse or reverse micelle in which the methacrylic acid segment forms the core (page 19, lines 19-24). Berge et al's microgel has been used to encapsulate particles or molecules including an inorganic oxide such as TiO_2 , ZnO (page 23, lines 6-11). The particles/molecules migrate through dispersing medium to the micelle (page 21, lines 11-16). **The polymer particle diameter is preferably in the range of 20 nm to 100 nm (page 5, lines 35-36; page 6, lines 1-2). In light of the fact that functional**

materials such as inorganic oxides are encapsulated inside the polymer particle, size of the inorganic oxides is expected to be less than 100 nm. The concentration of block polymer is chosen to be greater than critical micelle concentration and sufficiently low such that discrete micelles of desired size are formed and is typically in the range of 0.001 to 70 wt% (page 19, lines 11-15). Furthermore, a polymerizable monomer and a free radical initiator may be added to the solution containing micellized block copolymer and the solution heated or irradiated (page 16, lines 14-19).

The prior art of Berge et al is silent with respect to percentage of inorganic oxides in the composition.

However, Garces teaches encapsulation of active principles using various polymers (column 1, lines 7-10). Typical examples of active principles include UV protectors (column 3, lines 32-36). **Typical UV-A filters can include insoluble pigments i.e. finely dispersed metal oxides. Examples of metal oxides are in particular ZnO, TiO₂ and also oxides of Fe, Zr, Si, Mn, Al and Ce (column 8, lines 1-13). See Table 1, wherein ZnO and TiO₂ are present from 4 to 6 wt %. It is noted that the refractive index of ZnO and TiO₂ is 2.0 and 2.2 to 2.9 respectively.** Therefore, it would have been obvious to one skilled in the art at the time invention was made to use inorganic oxide in percentages of from 4 to 6 wt% in the composition of Berge et al because Garces has proven successfully that an amount of from 4 to 6 wt% of an inorganic oxide can be encapsulated by a film forming polymer and one of ordinary skill in the art

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would expect proportions of from 4 to 6 wt% to work for the micelle composition of Berge et al, motivated by expectation of success, in the absence of showing criticality of the wt% of inorganic oxides.

As to the limitation of claim 6, prior art does not teach using block polymer having a repeating unit structure of polyvinyl ether.

However, prior art of Berge et al contemplates monomers of formula $\text{CH}_2\text{C}(\text{L})(\text{M})$ to form block polymers, where L is selected from a group consisting of H and M is selected from group consisting of OR. In light of the above, it therefore would have been obvious to one of ordinary skill in the art at the time invention was made to use vinyl ether monomers for forming the block polymers having a repeating unit structure of polyvinyl ether because, this embodiment is within the generic disclosure of the reference and a skilled artisan would have expected all embodiments of a reference to work motivated by expectation of success.

As to the limitation of claim 7-10 and 12-13, the prior art is silent with reference to forming a cured thin film of their microgel composition on a substrate and a method for producing the cured film.

Given that the microgel composition of Berge et al in view of Garces consists of polymerizable monomers and free radical initiator and the solution is heated or irradiated with light and further in view of it being used in coating compositions, it would have been obvious to one skilled in the art at the time invention was made to coat a substrate with a solution containing microgel

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micelle composition of Berge et al in view of Garces and curing it with light or heat to arrive at the instant claims because Berge et al in view of Garces claims the use of microgel in coating composition and furthermore, microgel consisting of polymerizable monomer may be irradiated or heated to decompose the free radical initiator which will initiate the polymerization process. The examiner makes a note that coating compositions applied on substrate qualifies as thin films.

Response to Arguments

The correction to entry "EP 00227141" on form PTO-1449 is acknowledged.

The 35 U.S.C. 112, second paragraph rejection of claim 6 is withdrawn because of the amendment.

Applicant's arguments with respect to claims 1-10 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is

filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karuna P. Reddy whose telephone number is (571) 272-6566.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on (571) 272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service

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Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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